

WHAT IS CLAIMED IS:

1. An adjustable, elastic fixation device, comprising:

inner and outer thin, flexible, airtight materials, designed to substantially

5 superimpose;

airtight seams, connecting edges of said inner and outer airtight materials, defining an inflatable volume within;

a flexible structure, arranged between said inner and outer materials, for providing a generally even thickness to said inflatable volume, in the inflated state;

10 a valve, in fluid communication with said inflatable volume, for selectably inflating and selectably deflating said device, as desired;

a controlled inflation device, which may be selectably mounted on said valve, and selectably detached from said valve, for providing gradual inflation to said inflatable volume; and

15 an adjustable fastener, for adjustably fastening said device on a section of a body.

2. The device of claim 1, wherein when unfastened, said device may open to a generally flat configuration.

3. The device of claim 1, wherein said device is formed as a sleeve.

4. The device of claim 1, and further including a replaceable interface between said inner material, designed on a side of said body, and said body, said  
25 replaceable interface being selected from the group consisting of a washable interface and a disposable interface.

5. The device of claim 1, and further including a wrapper, which wraps said inner and outer materials.

6. The device of claim 5, wherein said wrapper is replaceable.

7. The device of claim 1, wherein said flexible structure includes an elastic structure, formed of first and second elastic layers which define repetitive cutout structures thereon, and which are connected by fiber columns.

8. The device of claim 1, wherein said flexible structure includes an elastic structure, formed of coiled springs.

9. The device of claim 1, wherein said flexible structure includes an interconnected channel structure.

10. The device of claim 1, wherein said adjustable fastener includes at least one pair of fastening strips, designed along a length of said device, parallel to a length axis of said body.

11. The device of claim 1, wherein said adjustable fastener includes at least two pairs of fastening strips, designed along a width of said device, perpendicular to a length axis of said body.

12. The device of claim 1, wherein said adjustable fastener includes at least two drawstrings, designed within respective draw channels.

13. The device of claim 1, wherein said device includes a plurality of length sections, each adapted for individual inflation.

14. The device of claim 1, wherein said device includes a plurality of width sections, each adapted for individual inflation.

15. The device of claim 14, wherein each of said width sections is adapted for individual fastening.

16. The device of claim 1, wherein said device is designed as a belt.

17. The device of claim 1, wherein said device is designed as a neck support.

18. The device of claim 1, wherein said device is designed as an arm support.

19. The device of claim 1, wherein said device is designed as a leg support.

20. The device of claim 1, wherein said device is designed as a knee support.

21. The device of claim 1, wherein said device is designed as an ankle support.

22. The device of claim 1, wherein said device is designed as a hip-joint support.

23. The device of claim 1, wherein said device is designed as an interface between a body stump and an artificial limb.

24. The device of claim 1, wherein said device is designed as an interface between a body and a backpack.

25. The device of claim 1, wherein said device is designed as an interface between a body and a child carrier.

26. The device of claim 1, wherein said device is designed as a vest.

27. The device of claim 26, wherein said vest is a combat vest.

28. The device of claim 26, wherein said vest is a bullet-proof vest.

5 29. The device of claim 26, wherein said vest is an outdoor vest.

30. The device of claim 26, wherein said vest further includes at least one pocket.

10 31. The device of claim 26, wherein said vest further includes a plurality of pockets.

32. The device of claim 26, wherein said vest further includes a fishing-poll pocket.

15 33. The device of claim 1, wherein said device further includes at least one first pressure gauge, for monitoring a pressure within said inflatable volume.

20 34. The device of claim 1, wherein said device further includes at least two first pressure gauges, for monitoring pressures within sections of said inflatable volume.

25 35. The device of claim 1, wherein said device further includes at least one second pressure gauge, for monitoring a pressure between said device and said body.

30 36. The device of claim 1, wherein said device further includes at least two second pressure gauges, for monitoring pressures between sections of said device and said body.

37. A method of orthopedic fixation, comprising:

selecting an adjustable, elastic fixation device, of a proper size and mode of fixation, said device comprising:

inner and outer thin, flexible, airtight materials, designed to substantially superimpose;

airtight seams, connecting edges of said inner and outer airtight materials, defining an inflatable volume within;

a flexible structure, arranged between said inner and outer materials, for providing a generally even thickness to said inflatable volume, in the inflated state;

a valve, in fluid communication with said inflatable volume, for selectably inflating and selectably deflating said device, as desired;

a controlled inflation device, which may be selectably mounted on said valve, and selectably detached from said valve, for providing gradual inflation to said inflatable volume; and

an adjustable fastener, for adjustably fastening said device on a section of a body;

fastening said device onto a section of a body, to said desired clearance; and

inflating said inflatable volume, to desired levels of stiffness and tightness.

38. The method of claim 37, and further including correcting said fastening after said inflating, to correct said levels of stiffness and tightness.

39. The method of claim 37, and further including adjusting said fastening with time.

40. The method of claim 37, and further including adjusting said fastening with activity.

41. The method of claim 37, and further including adjusting said inflation with time.

42. The method of claim 37, and further including adjusting said inflation with activity.

43. The method of claim 37, and further including removing and reapplying said device, as needed.

44. The method of claim 37, wherein when unfastened, said device may open to a generally flat configuration.

45. The method of claim 37, wherein said device is formed as a sleeve.

46. The method of claim 37, wherein said device further includes a replaceable interface between said inner material, designed on a side of said body, and said body, said replaceable interface being selected from the group consisting of a washable interface and a disposable interface.

47. The method of claim 37, wherein said device further includes a wrapper, which wraps said inner and outer materials.

48. The method of claim 47, wherein said wrapper is replaceable.

49. The method of claim 37, wherein said flexible structure includes an elastic structure, formed of first and second elastic layers which define repetitive cutout structures thereon, and which are connected by fiber columns.

50. The method of claim 37, wherein said flexible structure includes an elastic structure, formed of coiled springs.

51. The method of claim 37, wherein said flexible structure includes an interconnected channel structure.

52. The method of claim 37, wherein said adjustable fastener includes at least one pair of fastening strips, designed along a length of said device, parallel to a length axis of said body.

53. The method of claim 37, wherein said adjustable fastener includes at least two pairs of fastening strips, designed along a width of said device, perpendicular to a length axis of said body.

54. The method of claim 37, wherein said adjustable fastener includes at least two drawstrings, designed within respective draw channels.

55. The method of claim 37, wherein said device includes a plurality of length sections, each adapted for individual inflation.

56. The method of claim 37, wherein said device includes a plurality of width sections, each adapted for individual inflation.

57. The method of claim 56, wherein each of said width sections is adapted for individual fastening.

58. The method of claim 37, wherein said device is designed as a belt.

59. The method of claim 37, wherein said device is designed as a neck support.

60. The method of claim 37, wherein said device is designed as an arm support.

61. The method of claim 37, wherein said device is designed as a leg support.

62. The method of claim 37, wherein said device is designed as a knee support.

63. The method of claim 37, wherein said device is designed as an ankle support.

64. The method of claim 37, wherein said device is designed as a hip-joint support.

65. The method of claim 37, wherein said device is designed as an interface between a body stump and an artificial limb.

66. The method of claim 37, wherein said device is designed as an interface between a body and a backpack.

67. The method of claim 37, wherein said device is designed as an interface between a body and a child carrier.

68. The method of claim 37, wherein said device is designed as a vest.

69. The method of claim 68, wherein said vest is a combat vest.

70. The method of claim 68, wherein said vest is a bullet-proof vest.

71. The method of claim 68, wherein said vest is an outdoor vest.

72. The method of claim 68, wherein said vest further includes at least one pocket.



73. The method of claim 68, wherein said vest further includes a plurality of pockets.

74. The method of claim 68, wherein said vest further includes a fishing-poll pocket.

75. The method of claim 37, wherein said device further includes at least one first pressure gauge, for monitoring a pressure within said inflatable volume.

76. The method of claim 37, wherein said device further includes at least two first pressure gauges, for monitoring pressures within sections of said inflatable volume.

77. The method of claim 37, wherein said device further includes at least one second pressure gauge, for monitoring a pressure between said device and said body.

78. The method of claim 37, wherein said device further includes at least two second pressure gauges, for monitoring pressures between sections of said device and said body.